

LEAD *Action* NEWS

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The journal of The LEAD (Lead Education and Abatement Design) Group Inc.

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Lead Poisoning and Climate Change

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Thanks to Peter Garrett for funding GLASS for another year!

Great news! The Global Lead Advice and Support Service, run by The LEAD Group, is set to receive another year’s funding from the Federal Minister, Peter Garrett, Department of the Environment, Water, Heritage and the Arts (DEWHA). Funding for one year for one staff member and administrative costs was received for the 2009-10 financial year (FY). It is DEWHA’s funding in FY 2008-09 which allowed *LEAD Action News* to be reissued in its 9th volume. Many thanks also to the DEWHA staff of the Chemical Partnerships Section.



Barack Obama's administration allocates US\$169m for lead poisoning prevention in FY 2009-10

Seeing the urgency of addressing lead contamination in the USA, Barack Obama's Administration in May 2009 released the 2010 Financial Year Budget Proposal, allocating:

to the EPA US\$14,442,000 for the Lead Risk Reduction Program and \$14,564,000 for Categorical Lead Grants. (Ref: p. 458 (Risk Reduction) and p. 705 (Grants) www.epa.gov/budget/2010/fy_2010_congressional_justification.pdf); to the Department of Housing and Urban Development (HUD) a total of US\$140 million, towards lead related health awareness, prevention and management. He has requested an increase from the previous year's funding of US\$14.6 million to the proposed US\$20 million, indicating an almost 40% increase in the grant towards lead safety management. (Ref: p. 49 of 64 www.whitehouse.gov/omb/budget/fy2010/assets/hud.pdf)



New York family awarded more than US\$1 million for lead exposure in case against landlords

On Wednesday, June 10, 2009, a New York state Supreme Court judge approved a settlement giving four siblings aged 17 to 21, in Utica in Oneida County each a portion of US\$1.16 million. The lawsuit was filed against two landlords for injuries sustained from lead exposure. Utica and Oneida County were recently also granted US\$2m in federal funding to clean up lead in about 190 housing units and a \$273,000 grant from the state to reduce lead poisoning among children in Utica. For the full story see www.uticaod.com/homepage/x2085761468/Utica-family-awarded-more-than-1-million-for-lead-exposure

Editorial: The connections between lead poisoning and climate change

How are global warming, black carbon, lead in rainwater tanks and building cavities, drought, birds falling out of the sky, cyclones and wildfires connected?

Summary

Leaded petrol is still used in 15 countries with a total population approaching 275 million. Dr Axel Friedrich says phasing out lead from petrol not only protects millions of children and adults from lead poisoning, but is a necessary first step toward controlling greenhouse gases because a catalytic converter can only be used on lead-free petrol.

[A catalytic converter is a device used to reduce toxic emissions from internal combustion engines used in motor cars, trucks, buses, mining equipment, etc.]Michael P. Walsh says three-way catalytic converters dramatically reduce climate change. Rick Stegman says black carbon, the soot from incomplete combustion of fossil fuels (petrol, coal etc.), is the most potent climate-warming aerosol. He says soot particles in snow as small as 10 parts per billion allows snow to absorb more solar radiation and thus melts more rapidly. Dr Charles Zender says black carbon has caused as much as 30% of Arctic warming since pre-industrial times [earlier than, say, 1750]. Dr Mark Jacobson says soot from fossil fuels and biofuels [e.g. ethanol] combined

may cause about 16% of gross global warming. Sir Nicholas Stern says average global temperature has risen 0.7 degrees centigrade above pre-industrial times. There are predictions that by 2100 temperatures will rise by 1.5-2.0 degrees centigrade even if action is taken today, and by 5-6 degrees if no action is taken. Global heating causes drought, and water shortage leads to the installation of rainwater tanks, but they may be unsafe because of lead in roof materials. Water in a quarter of the tanks in rural Victoria was found to have a lead level higher than the health guidelines. The LEAD Group says the World Health Organisation's guidelines for safe lead levels in the blood should be lowered from [10 µg/dL \(micrograms per decilitre\) to 2 µg/dL](#). 28% of children in an Australian lead-mining town, Broken Hill, have blood lead levels higher than 10 µg/dL. In the drought year 2007, Broken Hill children suffered the first increase in blood lead levels since 1992.

Hot weather exacerbates the effects of lead poisoning. Birds began 'falling out of the sky' in the port town of Esperance, Western Australia, in December 2006. Michelle Crisp advised the authorities and The LEAD Group that bird deaths were 'really bad' on 17 December, when the temperature was 42.5 degrees centigrade [104 degrees Fahrenheit]. More birds died in March 2007, when the temperature was 38.5 C [100 F].

[**Note.** Upwards of 9,500 birds died and seven children were found to have been poisoned by lead at Esperance. An inquiry in 2007 found that lead dust had escaped when lead carbonate was being loaded on ships in windy conditions from December 2006 to March 2007. On 10 June 2009, it was revealed that the Esperance Port Authority had plea-bargained a charge of causing pollution with criminal negligence down to a charge of causing pollution. The Authority's guilty plea to the lesser charge put it at risk of a fine of no more than A\$1.325 million on sentencing in September 2009.] Lead dust from leaded petrol emissions has settled in building cavities, soil and water bodies. Global heating causes more cyclones; subsequent flooding causes residual lead particles in soil to be uncovered and spread more widely. This was particularly noted in New Orleans after Hurricane *Katrina* [2005].

As one Vermont journalist noted "Global warming grabs more headlines than lead contamination, but the heavy metal actually poses a more imminent environmental health threat in Vermont..." I would add, "...and elsewhere."

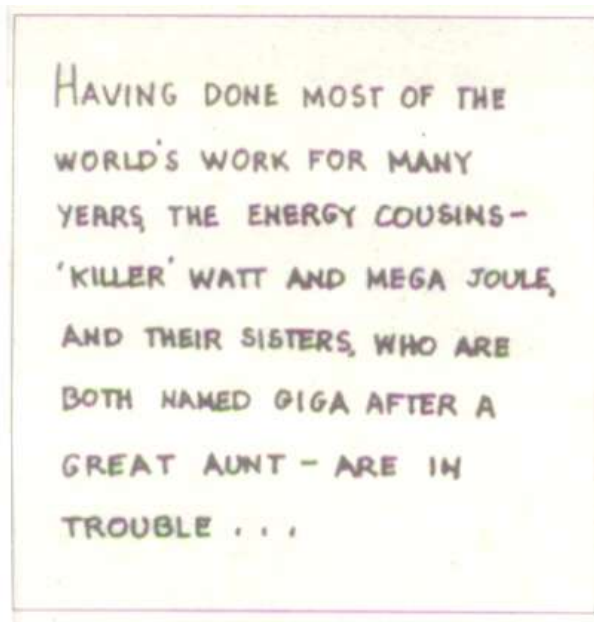
This edition of *LEAD Action News* also contains a letter on lead contamination in a residential property in NSW, written by a tenant who kindly gave permission for us to web-publish it, in the hope that it might help others to successfully be compensated if they should happen to find that the home they are renting is lead-contaminated. Note news item on compensation for rental lead poisoning US-style.

Lead abatement and greenhouse gas abatement go well together

by Elizabeth O'Brien and Anne Roberts, The LEAD Group Inc.

Climate change is the most urgent issue facing us on the planet. Quite rightly, it's attracting a mass of media attention, a great deal of talk, but not nearly enough action. In this newsletter article our intention is to claim some of the attention and part of the action, and press for more of the latter.

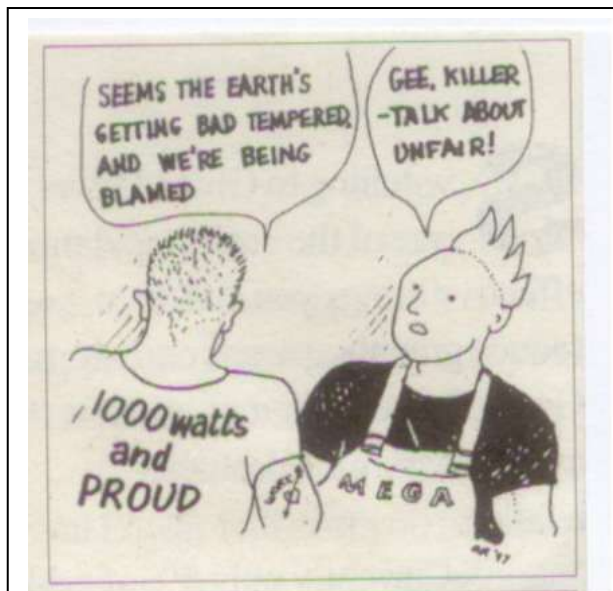
How are the problems of lead poisoning, and the predicted changes in the world's climate connected?



Between the early 1920's and 1986, leaded petrol was used in every country in the world. The global phase-out of lead from petrol will not only reduce exposure to lead poisoning, it will also reduce some contributors to global warming. (We are using the words "climate change" to cover the whole range of effects of global warming.)

The production of greenhouse gases and the deforestation which worsens their effect never occurs without other forms of environmental mismanagement: toxic air pollution from combustion, loss of topsoils, massive creation of farm animal waste, etc. In this article, we will focus on the lead pollution which occurs as a result of combustion.

Global warming has and will continue to have adverse effects on organisms already exposed to excessive lead levels. Exposure to lead will be increased during drought, floods, cyclones, wildfires and heatwaves, which are becoming more severe and frequent as a result of global warming.



Drawings by Anne Roberts, 1997

How will the global phase out of leaded petrol help slow the rate of climate change?

The most important public health policy in reducing global blood lead levels is the phase-out of lead from petrol; unfortunately still incomplete. According to the United Nations, there are fourteen countries [Ref: www.unep.org/PCFV/PCFVNewsletter/7GPM.html] where leaded petrol is still sold for road vehicles. The UN has not however recognized Kosovo as a separate country so, including Kosovo there are fifteen countries with a total population of over a quarter of a billion people, still selling leaded gasoline for road use. [Ref: www.lead.org.au/fs/fst27.html]

Making it mandatory to remove lead from petrol allows the use of catalytic converters. Only countries which have already banned leaded petrol are in a position to require the use of catalytic converters in all new motor vehicles sold.

Black carbon, or soot emitted from vehicles and other sources, is a potent greenhouse gas

Catalytic converters have undoubtedly reduced the amount of greenhouse gases including Black Carbon, coming from petrol engines, more than any other technology. For a country to be able to introduce vehicles with catalytic converters, it has had to phase out leaded petrol for road use. As far back as 1999, a news release by James Rochow, of The Alliance to End Childhood Lead Poisoning, following a meeting in Bonn, Germany, stated that the Health and Climate Change workshop "endorsed integrated solutions to climate change, including leaded gasoline phase-out. Integrated solutions must consist of measures that quickly and easily improve energy efficiency; help control Greenhouse Gases, both directly and indirectly; and achieve other pollution prevention benefits."

Rochow quoted Dr. Axel Friedrich, Director of the Environment and Transport Division of the German Federal Environment Agency: "Leaded gasoline phase-out is a perfect example of an integrated solution," said Dr. Axel Friedrich, "In addition to protecting millions of children and adults from lead's harmful effects, eliminating its use in gasoline is a first necessary step to controlling a host of other air pollutants, including greenhouse gases"...

Rochow stated that lead makes it impossible to take advantage of modern technologies - such as fuel injection systems, on-board computers, oxygen sensors, and catalytic converters - that improve energy efficiency and reduce toxic vehicle emissions.

At the 6th Global Partnership Meeting of the Cleaner Fuels and Vehicles Partnership (PCFV) of the United Nations Environment Program, in Beijing in May 2008, Michael P. Walsh and Elizabeth O'Brien had the following interaction, as recorded in Elizabeth's personal minutes of the meeting:

Michael Walsh (The International Council for Clean Transportation (ICCT)): PCFV is a climate change program, and all of PCFV's activities are related to GHG [greenhouse gas] reduction.

The ICCT met in Hong Kong recently, and recognized that clean fuels for vehicles are important in climate change.

Transportation is a major contribution to GHG as defined by the Kyoto Protocol, which focuses on other contributors, but GHG from transportation is increasing everywhere, and most growth is expected in China, India, and the rest of Asia. The African countries are increasing their annual energy demand in the transport sector by 3-5%/year. We need to constrain global temperature increase to 2°C...

It's appropriate to see CO₂ as the main contributor to GHG. Black carbon, tropospheric ozone, and methane combined are more important than CO₂, and we can dramatically reduce these through clean fuels for vehicles.

Black carbon is a significant component of particulates. Vehicles make a significant contribution to particulates. Black carbon travels far and damages ice caps at the poles... The reason black carbon hasn't been included in the Kyoto Protocol is because its size and impact is contended. A unit of black carbon may be 2200 to 4500 times more potent than a unit of CO₂. Black carbon intercepts direct and reflected sunlight...

Vehicles are the principal source of methane and NO_x which contribute to tropospheric ozone...

We need low carbon fuels and to reduce VKT [vehicle kilometers traveled ie kilometers traveled per vehicle].

Elizabeth O'Brien: Michael, can you comment on the impacts of catalytic converters on GHG from transport?

Michael Walsh: The 3-way catalytic converter dramatically reduces climate change. **Elizabeth O'Brien:** Then my recommendation is to speed the phase out of leaded petrol as a major contribution to climate change. [End of minutes]

In his "Slide Presentation: Presented at the UNEP/OECD Meeting on Lead in Gasoline, 12-13 December, 1996 (Paris)", Michael P. Walsh (see www.oecd.org/dataoecd/3/29/1944719.pdf) lists: Lead In Gasoline Causes Serious Problems:

- High Ambient Lead Levels
- Precludes The Use of Catalytic Converters To Reduce CO, HC and NO_x
- High Vehicle Maintenance Costs

In his article "Ancillary Benefits for Climate Change Mitigation and Air Pollution Control in the World's Motor Vehicle Fleets," Michael P. Walsh (see <http://arjournals.annualreviews.org/doi/abs/10.1146/annurev.publhealth.29.091307.083257?journalCode>

[=publhealth](#)) begins by stating the case: "On-road motor vehicles, including cars, trucks, buses, and two and three wheelers, are a major source of urban air pollution and an increasingly important contributor to global anthropogenic carbon dioxide and other greenhouse gases. Great progress in reducing from gasoline-fueled cars emissions of urban air pollutants and their precursors has occurred in the major industrialized countries, and stringent requirements for diesel vehicles are starting to be phased in. However, the vehicle population and vehicle kilometers traveled are expected to continue to grow rapidly in the future, especially in developing countries, which will offset many of the gains to date". Unfortunately, as Walsh seeks to identify, there are "areas in which strategies to reduce greenhouse gases (GHGs) conflict with strategies to reduce conventional pollutants or vice versa." But he also seeks to "highlight strategies that can produce co-benefits resulting from both. Walsh lists three technology-based approaches to "reduce GHGs in the transportation sector: Setting mandatory or voluntary greenhouse emissions or fuel efficiency standards, shifting to lower-carbon fuels and advanced vehicle technologies, and reducing the use of motorized vehicles."

These are approaches which require legislation by national governments. Reducing the use of motorised vehicles requires provision of alternative methods of transportation and the planning of cities to reduce the need for long distance commuting.

How black carbon contributes to global warming

You are almost certainly familiar with the term "greenhouse gases". What, on the other hand, is "Black Carbon", and how does it contribute to global warming?

According to WorldWatch Institute's *Glossary of 39 Key Terms for Understanding Climate Change*, on Black Carbon: "Some scientists believe that black carbon plays a large role in climate change and that reducing it may be one of the best opportunities to slow climate change in the short run."

The following is from "[Black Carbon: Playing a Major Role in Arctic Climate Change](#)" by Rick Stegeman, published on June 12, 2008 in Articles, Arctic, Atmosphere & Space: "Black carbon - which is essentially the soot that results from the incomplete combustion of fossil fuels (petroleum, coal), biofuels, and biomass (wood, animal dung, etc.) - is the most potent climate-warming aerosol. The aerosol enters the atmosphere from automobiles (those with diesel engines being particularly high emitters), coal-fired power plants, wood stoves, kerosene lamps and forest fires. If produced continuously, and in large quantities, these can have a surprisingly large impact on climate, especially in the cryosphere. In fact, the latest research shows that black carbon is second only to carbon dioxide as far as major contributors to climate change. Soot produced by fossil fuels and biofuels combined may contribute to about 16% of gross global warming, according to Dr. Mark Jacobson, Civil and Environmental Engineer at Stanford University in California, one of the first climate modellers to integrate black carbon into the latest generation of climate models.

"After being emitted, black carbon particles can remain suspended in the atmosphere anywhere from a week to four weeks before they are "washed out" and return to the earth via settling or precipitation. While suspended in the atmosphere, the presence of black carbon particles has a net warming effect. Unlike greenhouse gasses, which trap infrared radiation that is already in the earth's atmosphere, black carbon particles, being black, absorb all wavelengths of sunlight and then re-emit this energy to the surrounding environment as infrared radiation.

As much as 30% of the warming in the Arctic is caused by black carbon in the snow

"One place where black carbon particles can continue to have an impact once they reach the ground is in the cryosphere, particularly in the Arctic, which is polluted by black carbon aerosol transported through the atmosphere from its source, the highly-industrialised areas of the Northern Hemisphere. When pure, snow is very white and thus very effective at reflecting solar radiation from the earth's surface. If soot particles

enter the snow, even in concentrations as small as ten parts per billion (which is undetectable to the unaided human eye), this reduces the snow's albedo, allowing it to absorb more solar radiation and allowing it to melt more readily.

"Experts believe that black carbon has been responsible for significant warming in the Arctic. As much as 30% of the warming in the Arctic since pre-industrial times can be attributed to anthropogenic black carbon, according to Dr. Charles Zender of Earth System Modeling Facility at the University of California, Irvine, who is an expert in modelling atmospheric aerosol transport to the Arctic. During Arctic winters when there is little sunlight, the presence of dark soot particles in the snow doesn't make much difference. Only when solar radiation begins to increase rapidly in the spring and the melting season begins does black carbon have its greatest impact on snow cover. The presence of black carbon on the snow makes it absorb more solar radiation than it otherwise would, leading to more intense melting earlier in the spring. As snow and ice melt, this exposes darker, less reflective surfaces such as land and open water and creates a positive feedback situation which leads to accelerated melting, commonly referred to as snow-albedo feedback."

So why does Wikipedia say catalytic converters worsen climate change?

The following information can be found on Wikipedia as at 22nd June 2009:

Environmental impact

Catalytic converters have proven to be reliable devices and have been successful in reducing noxious tailpipe emissions. However, they may have some adverse environmental impacts in use:

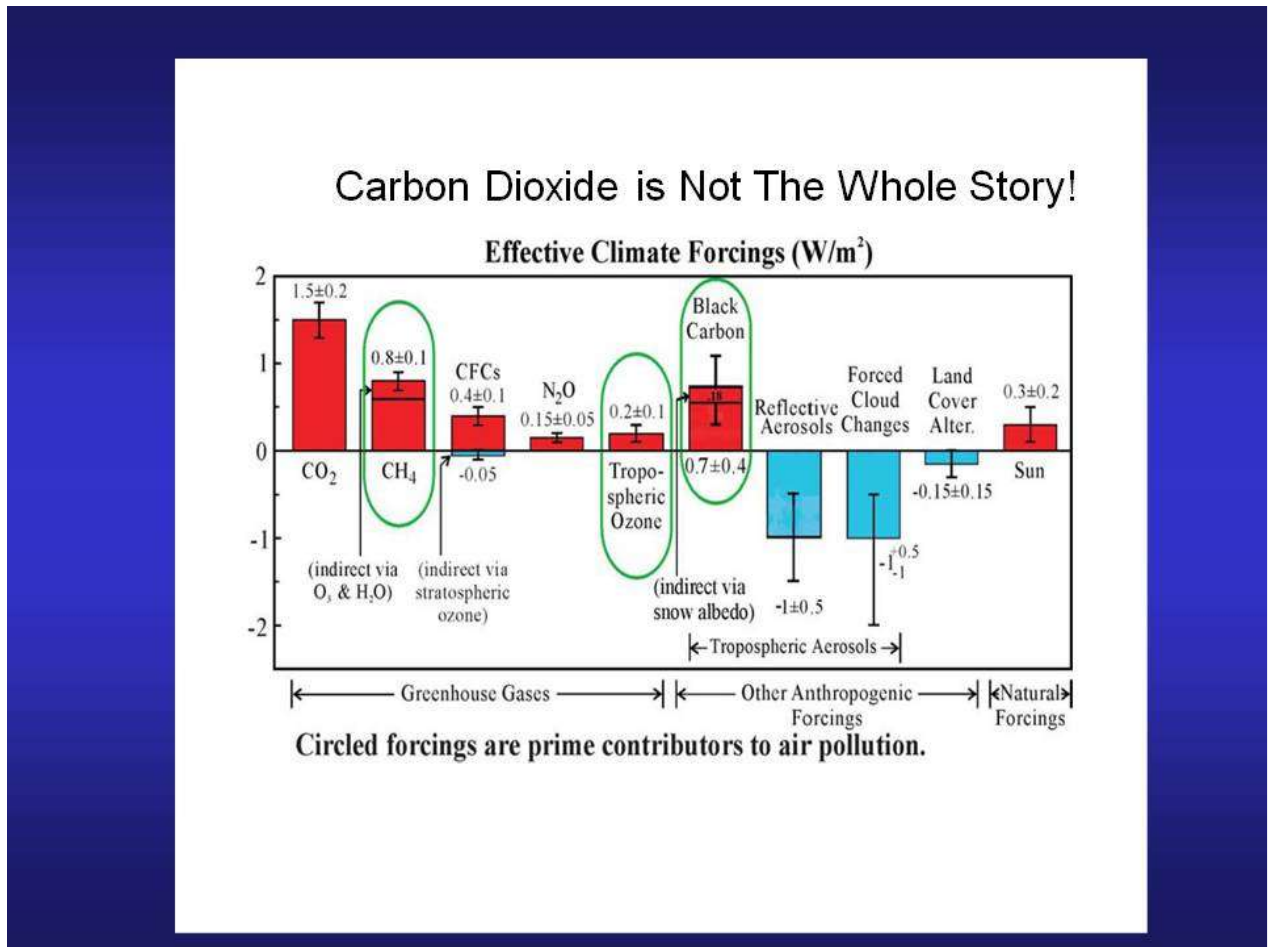
The requirement for a rich burn engine to run at the stoichiometric point means it uses more fuel than a "lean burn" engine running at a mixture of 20:1 or less. This increases the amount of fossil fuel consumed and the carbon dioxide emissions of the vehicle. However, NO_x control on lean burn engines is problematic and difficult. Although catalytic converters are effective at removing hydrocarbons and other harmful emissions, most of exhaust gas leaving the engine through a catalytic converter is carbon dioxide (CO₂), one of the greenhouse gases indicated by the Intergovernmental Panel on Climate Change (IPCC) to be a "most likely" cause of global warming. Additionally, the U.S. Environmental Protection Agency (EPA) has stated catalytic converters are a significant and growing cause of global warming, due to their release of nitrous oxide (N₂O), a greenhouse gas more than 300 times more potent than carbon dioxide. Michael P Walsh kindly sent the following graphic and made the following comments in response to this extract from Wikipedia:

The impact of motor vehicles on climate change would be much worse without catalytic converters. These systems dramatically reduce carbon monoxide, hydrocarbons and nitrogen oxides from gasoline fueled vehicles and catalyzed particulate filters dramatically reduce particulate matter and black carbon from diesel vehicles. Reducing these pollutant has tremendous public health benefits as CO, Ozone (which results from HC and NO_x in the presence of sunlight), PM (some of which is produced by secondary transformations of NO_x) and NO₂. With regard to climate, the impacts are almost all very positive.

- 1. CO emitted from vehicles is important for climate because it eventually is transformed in the atmosphere to CO₂ but along the way consumes hydroxyl radicals which would otherwise consume methane. Thus it is better to convert it to CO₂ before it leaves the vehicle.*
- 2. Hydrocarbons and NO_x not only form low level ozone they contribute to the global ozone background which is a very potent greenhouse gas.*
- 3. Some of the hydrocarbons emitted are methane which is a very potent greenhouse gas.*
- 4. Catalytic converters reduce the conventional pollutants with much less impact on CO₂ emissions and fuel economy. When catalytic converters were first introduced in the United States, the average fuel economy of new cars increased by about 10% compared to the previous model years because*

alternative methods of reducing NO required detuning the engine and using methods to lower peak combustion temperature which also hurt fuel economy and increased CO2 emissions.

5. Black carbon from diesel vehicles is virtually eliminated by catalyzed PM filters; this is the second or third most potent greenhouse pollutant after CO₂.
6. It is true that catalyst cars produce N₂O but the vehicle contribution to this pollutant is very minor compared to the others I noted. Also the most advanced catalysts which are needed to meet the more stringent emissions standards emit much less N₂O than the earlier catalysts.



1.

Climate change forcing graph shows the impacts of various elements on global temperature. Courtesy of Michael P. Walsh.

All combustion activities create both greenhouse gases and lead pollution

The simple truth is: **all combustion creates some lead pollution**, because lead is ubiquitous in the environment. All combustion also creates a range of toxic air pollution, and combustion of solid fuels creates contaminated ash and other contaminated solid waste. Here we are only listing the leaded pollution from combustion.

Lead occurs naturally in soils and rocks so the largest source of non-anthropogenic lead air pollution is volcanic activity. According to the San Diego State University Department of Geological Sciences: "Volcanic eruptions can enhance global warming by adding CO₂ to the atmosphere. However, a far greater amount of CO₂ is contributed to the atmosphere by human activities each year than by volcanic eruptions." The

same is true for lead from volcanoes. [Ref: www.geology.sdsu.edu/how_volcanoes_work/climate_effects.html]

The combustion of leaded petrol / gasoline is regarded as the greatest source of planetary lead pollution (pollution of air, water bodies, ice, soils, sediments, building dusts, etc) ever! The addition of lead to petrol has been called “**the** mistake of the Twentieth Century”! [Ref: Carl M Shy, World Health Statistics Quarterly 43 (1990)]. The combustion of unleaded petrol / gasoline also contributes a small amount of lead pollution because lead naturally occurs in crude oil and is thus found in trace amounts in all petroleum refinery products.

Lead naturally occurs in wood to varying degrees depending on the particular species and the amount of lead in the soil. See [Fine Particulates \(PM2.5\) Air Pollution Australia & Lead in Woodsmoke](#).

Lead is emitted from all coal burning, including from coal-burning power stations. The CSIRO notes that: “[In Australian coal] Lead is present predominantly in pyrite and other sulfide minerals in bituminous coals. Occurrences of lead selenide have been reported.

“[During combustion] Lead is volatile and condenses on the fly ash particles. It is enriched in the finer particles. A small percentage of these fine particles are emitted to the atmosphere from modern power stations.” [Ref: www.csiro.au/resources/Lead-In-Export-Coals.html - 3 June 2009]

The CSIRO gives the concentration of lead in coal as: from less than 1 part per million (ppm) up to 22 ppm with an average of 7 ppm. Dr Karl Kruszelnicki notes:

“On average, coal has 1.3 parts per million of uranium and 3.2 parts per million of thorium... These are very small quantities, but on the other hand a lot of coal gets burnt.

“The world-wide use of coal in 1991 was about 5,100 million tonnes. When that coal was burnt, some 6,630 tonnes of uranium and 16,320 tonnes of thorium were released into the biosphere.” [Ref: www.lead.org.au/lanv5n3/lan5n3-8.html]

By extension, some 35,700 tonnes of lead would have been released in 1991 from coal-burning. But... “the rate of coal consumption is annually increasing at 2-3% per year” [Ref: http://en.wikipedia.org/wiki/Coal#Coal_as_a_traded_commodity]

Municipal and other wastes contain as much as 1% (10,000 ppm) lead which would mean in most countries it could be classified as a hazardous substance under occupational regulations, purely on the basis of its lead content, let alone other toxics. Incineration of municipal waste still occurs in many countries, including for electricity generation, thus presumably releasing many tonnes of lead and other toxics into the air or the bottom ash. Wikipedia tells us that “incineration of 1 ton of MSW [Municipal Solid Waste] produces approximately 1 ton of CO₂. [Ref: <http://en.wikipedia.org/wiki/Incineration#CO2>]

Getting more bang for your climate change abatement buck

Even at very low levels, lead poisoning in children can cause developmental disabilities, hyperactivity, impaired growth, hearing loss, blood diseases, behaviour problems, reduced attention span, delinquency, criminal behaviour and decreased productivity. Effects on adults include high blood pressure, kidney disease, and impaired fertility. The almost completed phase out of leaded petrol has been the most important factor in reducing all these health effects.

Detoxing homes of ceiling dust before laying thermal insulation makes more sense than leaving it up there for future generations

Following is a letter from The LEAD Group to the Honourable Peter Garrett AM, MP, Australian Minister for Environment, Heritage and The Arts. The reply from the environment department is provided as well.

Even in the 200 or so countries which have already phased out leaded gasoline, the fallout from leaded petrol vehicle emissions doesn't suddenly disappear from the environment on the lead petrol phase-out date. [You'd be amazed at how many publications including by governments, imply that the phase-out of leaded petrol decreases lead in the environment!] This airborne lead dust settles in dusts in buildings (and especially in building cavities – ceiling cavities, wall cavities, under-floor cavities), and in soils, water bodies and sediments. In Australia, hiring an Australian Dust Removalists Association member nicely combines a toxics issue (detox your home by removing lead-containing ceiling dust from the roof void) with action to reduce global warming (by installing roof insulation).

GLASS provides information & referrals on lead poisoning & lead contamination prevention & management, with the goal of eliminating lead poisoning globally & protecting the environment from lead. GLASS is run by The LEAD Group Incorporated ABN 25 819 463 114



**global lead advice
& support service**



----- Original Message -----
From: The LEAD Group To: minister.office@environment.gov.au
Sent: Wednesday, 25 March, 2009 5:02 PM



Subject: Insulation rebate is an opportunity for responsible action & awareness-raising on the hazards of ceiling dust

Dear Minister Garrett,

congratulations on introducing the Energy Efficient Homes Package including the rebate for installation of insulation in home ceiling voids. This will be a great government investment in reducing greenhouse gas emissions.... but it could be much much more than that.

One thing concerns me greatly. I have received many enquiries recently here at the Global Lead Advice and Support Service because a flurry of activity is occurring in the insulation installation industry and some companies who have not done any work in insulation installation before are turning their hand to it, as well as those companies who do insulation installation as an ad-on when doing ceiling dust removal are being asked to just do the insulation installation, etc. Householders have also asked questions, for instance: "Re: government rebates: Do insulation installers have to clean the ceiling dust before starting their installation?" I have no problem with lots more heat insulation being installed and I see that DEWHA [Department of Environment, Water, Heritage and the Arts] is managing to ensure that only the work of qualified installers is rebated so those are not my concerns.

What concerns me greatly is that a fantastic opportunity for cleaning up the environment and educating householders and contractors about a little-known environmental health hazard, is being missed: I'm talking about informing people about ceiling dust, and perhaps offering a rebate for removal of ceiling dust prior to insulation installation. Can you imagine yourself being an insulation installer and going into toxic ceiling void after toxic ceiling void full of fine respirable dust (with an array of heavy and radioactive

metals), plus insects, mammals or birds nests and detritus, and asbestos and synthetic mineral fibres? And what if, because your employer was uninformed or had their head in the sand about the hazards of ceiling dust, this hazard is not taken into account in your boss's hazard management plan? So you're not supplied even with a dust mask, gloves or overalls and you carry the dust home on your clothes which get washed with your kids clothes. And nobody ever tells you, you should get a blood lead test (because lead is a marker contaminant in ceiling dust) so you keep on doing the job until you get sick of the shocking conditions (the heat, the risk of falls or electrocution) still none the wiser about how that lead exposure is probably going to take years off your life as well as take IQ points off your kids. Can you imagine?

All this can be avoided if you could direct DEWHA staff to change the website www.environment.gov.au/energyefficiency/index.html and to proactively inform the people who apply for a rebate and those who benefit from the rebate, like contractors doing the work, about the hazards of ceiling dust and how a home can be detoxed rather than just sealing dust in with new insulation which will become instantly contaminated by the ceiling dust that's up there.

Obviously the newer a home is, and the further it is from industry, mining or heavily trafficked roadways, the less dust it's going to have in the ceiling void. Since lead petrol was banned in 2002, the rate of accumulation of lead in ceiling dusts would have dropped significantly, but that still leaves millions of homes with highly leaded ceiling dusts and often with hundreds of kilos of dust which could be trickling into the living space or grossly contaminating the house and yard when a ceiling collapses as during hail storms, fires or other disasters. If you could also offer a rebate on ceiling dust removal then your insulation rebate would be the best federal government initiative demonstrating ceiling dust awareness since the Sydney Aircraft Noise Insulation Project (SANIP) which paid for ceiling dust removal from thousands of buildings prior to their demolition or noise insulation installation.

SANIP plus the 1999 hail storm which damaged 20,000 roofs in Sydney, inspired the licensing of a secondary lead smelter in Sydney (ARA) for recycling of the lead out of ceiling dust, as well as the development of the Australian Dust Removalists Association (ADRA) and NSW WorkCover Authority's "GUIDANCE NOTE FOR CEILING DUSTS CONTAINING LEAD" at www.workcover.nsw.gov.au/Documents/Publications/AlertsGuidesHazards/AsbestosFibroDemolition/ceiling_dust_containing_lead_guidance_note_4955.pdf.

In summary:

- there really is no better time to remove ceiling dust than when you are installing insulation, (and now that lead is no longer in petrol the rate of future accumulation of leaded ceiling dusts will be drastically lower than the pre-2002 rate of accumulation);- since the federal government rebate scheme encourages the installation of insulation, the government has a responsibility to, at the same time as offering the rebate, at the least advise people of the hazards of ceiling dust, or better still, offer a rebate for the ceiling dust removal as well. See www.adra.com.au for all the reasons why ceiling dust removal is good for health and the environment.

I look forward to a response to my concerns from your office and I hope you have a good week!

Yours Sincerely

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Department of the Environment, Water, Heritage and the Arts

C09/12468

Ms Elizabeth O'Brien
Manager
Global Lead Advice & Support Service
PO Box 161
SUMMER HILL NSW 2130

Dear Ms O'Brien

I refer to your email of 25 March 2009 to the Minister for the Environment, Heritage and the Arts, the Hon Peter Garrett AM MP concerning the Australian Government's Energy Efficient Homes Package and the removal of lead dust. I have been asked to reply on his behalf and regret the time this has taken. Unfortunately the Department has no record of receiving your original correspondence in March and has only recently become aware of your issues.

The Package formally commenced on 1 July 2009 and will operate until 31 December 2011. It aims to drive employment, help the environment and boost the economy. This assistance will also help homeowners and renters to reduce their energy consumption by either having ceiling insulation installed or replacing their electric hot water system with a more energy efficient unit.

The decision to provide assistance with ceiling insulation in Australian homes was influenced by the fact that it is one of the single most cost effective ways to reduce household energy consumption and that there are some 2.9 million households nationally which are not insulated.

In the course of developing policy guidance on the implementation of this key initiative, the Government has undertaken significant consultation with industry and stakeholders on planning and design of key components of the measure including program and technical requirements.

The program applies to eligible households where there is no insulation or where there are insulation materials that are deemed to have negligible effectiveness that is, an R-value of 0.5 or less. The Package does not exclude the simple vacuuming up of residual debris, such as dust and leaf litter in the ceiling space. However the maximum assistance under the package is \$1,600 for homeowners and \$1,000 for landlords/renters and if the cost of the insulation exceeds the assistance, a householder may choose not to incur additional costs associated with clearing the ceiling space.

If hazardous materials such as asbestos or lead are present, we suggest that the householder, in consultation with their installer, be guided by their relevant state or territory guidelines on the removal and handling of hazardous materials. Assistance under this Package does not extend to covering the cost of removal of hazardous materials.

Thank you for your interest in the Energy Efficient Homes Package.

Yours sincerely
Kevin Keefe
Assistant Secretary, Home Energy Branch [DEWHA]
August 2009

[The rebate was reduced to \$1,200 on 1st November 2009 and suspended on 19th February 2010, until a replacement program is brought in by 1st June 2010?]

Why you should have your ceiling dust removed before you take advantage of the Australian government's Energy Efficient Homes Package: Insulation Program

By Anne Roberts and Elizabeth O'Brien, The LEAD Group Inc.

This initiative by the Federal Government Department of the Environment, Water, Heritage and the Arts (DEWHA), to reduce energy use by households is commended. However, The LEAD Group urges the Department to advise householders to have ceiling dust removed before insulation is installed. This is typically going to be the only way that installers will be forced to comply with state OH&S regulations by having a risk management plan which includes safe removal of ceiling dust prior to insulation installation. We also recommend that the Department's directions to insulation installers include guidelines on the removal of ceiling dust, in accordance with guidelines set out by WorkCover NSW (see below).

What the Insulation program is about

The Federal Government's ceiling insulation program provides a rebate of up to \$1,600 for home owners, and up to \$1,000 for landlords or renters.

[The rebate was reduced to \$1,200 on 1st November 2009 and suspended on 19th February 2010, until a replacement program is brought in by 1st June 2010?]

The package does not "exclude" what is referred to (in the above letter from DEWHA to the Global Lead Advice Service) as the "simple vacuuming up of residual debris, such as dust and leaf litter in the ceiling space."

On the other hand, neither does the package contain a recommendation that ceiling dust be removed before insulation is installed.

Use of the word "simple" in relation to the removal of ceiling dust is interesting. There is no acknowledgment in the Environment Department's letter nor in information to householders that *any* ceiling dust, particularly in an Australian house built before 1970, will, without exception - none has been found so far - contain at least some lead dust particles, and probably a great many, if the house is anywhere near a busy road.

(Since the phase-out of leaded petrol in Australia in 2002, the rate of addition of lead to ceiling spaces has fallen markedly.)

The Federal Government's "Competency requirements for registration on the Installer Provider Register," June 2009, do not specify training in ceiling dust removal. There is no requirement stated that dust removal be carried out by a trained, competent dust removal contractor, using correct equipment.

The only such group of contractors in Australia are the members of The Australian Dust Removalists Association, (ADRA) - see www.adra.com.au

The Competency requirements for registering with the Federal Government as an Installer are as follows:

"Organisations and individuals on the Installer Provider Register must ensure that they (if an individual), and each individual they engage (whether employed or through a sub-contracting arrangement) to install ceiling insulation:

1. has the competency detailed in Section 1 below (Occupational Health and Safety Training), and
2. satisfies either (a) or (b) below:

the requirements detailed in one or more of Sections 2, 3 or 4 below or are supervised by an individual who satisfies the requirements for individuals listed above, and who signs off their work on the Work Order Form.

“Section 1 - Occupational Health and Safety Training (to be completed by all persons installing ceiling insulation) [This is a one-day course]

“Individuals supervising installation of ceiling insulation must also have one or more of the following competencies:

“Section 2 - Trade Specific Competency

“Be a licensed builder, electrician, carpenter, bricklayer, plasterer, painter or plumber (or equivalent, if no licensing requirements exist) in the relevant State or Territory.

“Note: it is recommended that tradespeople without insulation experience consider undertaking insulation specific training; or

“Section 3 - Insulation Specific Competency

Have achieved a statement of attainment from a Registered Training Organisation, against the BCG03 or CPC08 Training Package relating to insulation installation...or

“Section 4 - Prior industry experience

“Be an individual who has: experience and skill in installing ceiling insulation as a result of relevant work experience over a significant period of time (at least 2 years); and an understanding of the relevant Australian Standards and the Building Code of Australia.”



What the requirements for the registration of insulation contractors should include

There is no indication whether the one-day course referred to in Section 1 above deals with removal of ceiling dust or even the hazards of ceiling dust. These courses very likely don't.

Only NSW WorkCover, out of all the Australian States (in Victoria, the authority is called “WorkSafe”) has written a fact sheet on ceiling dust containing lead. NSW WorkCover also has a fact sheet on the hazards of insulation installation, among them lead and ceiling dust. All state and territory Occupational Health and Safety regulations require that the employer identify hazards prior to work beginning, and that they have a Hazard Management Plan to ensure safe work conditions for their employees.

The NSW fact sheet on a code of practice for the Control of Hazardous Substances states that:

“Contractors and workers involved in the cleaning, repairing, or demolition of ceilings should be aware of the information contained within this guidance note.”

By not making it a condition of the rebate that ceiling dust be removed prior to insulation installation (as much to protect the installers as to detox the home for all future residents) and be included as part of the Package, it is currently the case that householders will have to pay extra for ceiling dust removal, or not get it done at all, if they consider they can't afford it. However, in most cases, non-removal of ceiling dust will make the work of insulation installers non-compliant with OH&S regulations. Note for example, the

following statements from NSW WorkCover's "[FACT SHEET: HOW TO SAFELY INSTALL CEILING INSULATION](#)":

THE HAZARDS

When installing ceiling insulation, you should control the health and safety risks associated with:

- *insulation containing synthetic mineral fibres (SMFs) – eg rockwool or glasswool – or other fibres or dust that can irritate the skin, eyes and upper respiratory tract*
- *hazardous substances – eg asbestos, pesticides, chemicals or lead*

PRIOR TO INSTALLATION

If you're an employer, head contractor or self-employed worker, you must:

- *follow the risk management process – ie identify all the hazards, assess their risks and control them*

If you are an installer, before you enter the roof cavity to start the installation:

do a pre-work risk assessment of the roof cavity and advise the building owner of any identified risks that you cannot eliminate or control. Only start work once all the above is complete, and you are satisfied that the system of work and working environment is safe and without risk to health.

Now that NSW WorkCover has identified the hazard of leaded ceiling dust for insulation installers Australia-wide, DEWHA is the perfectly placed agency to ensure that all state and territory WorkCover Authorities, similarly create informative factsheets for insulation installers and police the industry in this, it's greatest growth phase ever. Telling the public about this hazard through the Energy Efficient Homes Package: Insulation Program website and all its publications that are being handed out in shopping centres all over Australia, is a sure-fire way to protect householders from the dust as well.

We include here, for the guidance of householders and/or contractors, a link to NSW WorkCover's [GUIDANCE NOTE FOR CEILING DUSTS CONTAINING LEAD](#) and quotes from it:

Note: *The Australian Safety and Compensation Council (ASCC) publish exposure standards in the document National Exposure Standards for Atmospheric Contaminants in the Occupational Environment 3rd Edition [NOHSC: 1003 (1995)]. Values for the exposure standards can be found online in the Hazardous Substances Information System (HSIS) database (www.ascc.gov.au) and interpretation of these standards can be found in the **Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment 3rd Edition [NOHSC: 3008 (1995)]**.*

Safe work procedures

“Contractors and workers involved in the cleaning, repairing or replacement of ceilings are advised to consider the following procedures, in order to minimise health risks from ceiling dust.

These procedures include:

1. Working in ceilings [Information for householders as well as contractors]

- *The sealing of any openings between living areas of the dwelling and the ceiling void prior to the commencement of any work to prevent dust entering the living area.*
- *The use of vacuum cleaners which comply with AS/NZS 3544 Industrial vacuum cleaners for particulates hazardous to health, to prevent the release of lead containing dust while it is being removed.*

2. Personal Protective Equipment (PPE) [Information for contractors]

The use of Personal Protective Equipment, including:

1. Respirators complying with AS/NZS 1716 Respiratory Protective Devices and used according to AS/NZS 1715 Selection, use and maintenance of respiratory protective devices. If the results of the risk assessment identify significant chemical contamination, a full-face respirator may be required to provide the needed level of respiratory protection. **Note:** A respiratory protection program should be set up by management in accordance with AS/NZS 1715.
2. Where respirators relying on facial fit are being used, workers should shave daily as beard and stubble can interfere with the facial fit, which could result in exposure to lead containing dust.
3. Eye protection, complying with AS/NZS 1336 and AS/NZS 1337 whenever full-face respirators are not worn.
4. Disposable coveralls with fitted hood (the type suitable for use in agricultural spraying and asbestos removal work, changed at regular intervals).

3. Decontamination and Personal Hygiene [Information for contractors]

The adoption of thorough decontamination procedures before each work break, including the observance of a high standard of personal hygiene. This can be achieved by:

- provision of soap and adequate washing facilities
- washing of hands before eating, drinking and smoking
- employers providing laundering of work clothes
- placing any used disposable overalls into marked bags, which should be sealed for disposal with other waste
- the containment and disposal of the removed dust and any contaminated clothing, rags and other waste should be in accordance with any NSW Department of Environment and Conservation (NSW DECC) (formerly the NSW EPA) requirements
- after the work has been done, all equipment must be decontaminated and the area cleaned of dust. Use wet methods to dampen down dust material before wiping up, or use industrial vacuum cleaners.

4. Training [Information for contractors]

Workers should be provided with training that includes:

1. the hazards associated with this type of work
2. an understanding of the health risk assessment process
3. an understanding of the results of health surveillance and biological monitoring
4. the selection, use and maintenance of respirators
5. safe work methods
6. acceptable personal hygiene for this type of work.

All training should be documented and a register of training kept.

The cost of detoxing a home of ceiling dust. Who will pay it?

DEWHA's information to home owners is that "the average cost to insulate a home is estimated to be \$1,200." It would be interesting to know if this proves to be the case, leaving the main contractor \$400 towards sub-contracting a dust removalist. Not enough! The Australian Dust Removalists Association (ADRA) website states: "ADRA advises that given today's current fuel prices and where there is relatively easy access to the job the average cost to vacuum a dust-only ceiling space is approximately \$10 per m² using WORKCOVER specified HEPA filtered equipment by trained staff. The \$10 per m² is for a building of approximately 100m² and smaller might have a larger charge whereas larger would be less per m²." "Difficult

entry and trussed low pitched roofs, removal of rubble and removal of old insulation, both batts and loose fill would involve extra cost. In cases of small areas, expect there to be a minimum job price.”

As noted above, no ceiling dust tests that we’ve seen in Australia have revealed the absence of lead. We therefore do not recommend testing ceiling dust for lead. It would almost certainly be an unnecessary expense in all but the newest of houses.

Partially Green – The Australian Government’s plan for an eco car for the Australian and export market

Life cycle reduction of greenhouse gases, toxics, and waste: not for Australian cars

Information collated and annotated by Anne Roberts and Elizabeth O’Brien

Europe is a long way ahead of Australia when it comes to green innovation. Maybe it’s because it’s so old, the countries are mostly so small – compared to us – and they haven’t vast spaces left to ruin and fill with rubbish.

There also seems to be an Australian attitude that because the country is so large, we must have more roads – and use a car - because of the greater distances. Never mind that most people live in cities, where public transport, cycling and walking makes more sense but has been willfully neglected, even in the major cities. For longer distances, rail makes more sense than roads. Same story.

“Australia has a high dependency on car travel. It accounts for around 80 per cent of all passenger travel, and it is a highly energy intensive form of transport.”(The Royal Automobile Club of Queensland - September 2008, Submission to Carbon Pollution Reduction Scheme: Green Paper.)

In the context of a global economic crisis and global warming, the Australian Federal government has produced a “New Car Plan for a Greener Future”, which includes a Green Car Innovation Fund. Before outlining the government’s proposals, based on its media releases and fact sheet, we present two examples in support of the claim that Europe is far ahead of Australia when it comes to green innovation, specifically in relation to cars.

1. [End-of-Life Vehicle Recycling in the European Union](#) From JOM, by N. Kanari, J.-L. Pineau, and S. Shallari, August 2003:

[JOM is published monthly by The Minerals, Metals & Materials Society (TMS)]

Vehicles, essential to society, are continually increasing in use. However, throughout their life cycle vehicles impact the environment in several ways: energy and resource consumption, waste generation during manufacturing and use, and disposal at the end of their useful lives. About 75 percent of end-of- life vehicles, mainly metals, are recyclable in the European Union. The rest (~25%) of the vehicle is considered waste and generally goes to landfill. Environmental legislation of the European Union requires the reduction of this waste to a maximum of 5 percent by 2015.”

The next item reveals the European car industry is having difficulty with the regulations, but accepts the concept of cradle-to-grave responsibility for car manufacturers. We include details of EU manufacturers’ difficulty with regulations in recognition of the “nobody said it was going to be easy” principle.

2. [Recycling - a prime example of industry progress](#) from the ACEA European Automobile Manufacturers’ Association, (last updated 19/05/2009) *Responsible manufacturers take a holistic view when considering opportunities to recycle and recover material at the end of a product’s life. This forms part of a sustainable manufacturing strategy and the car sector has embraced this cradle-to-grave approach. The automotive industry has invested in the development and use of innovative, sustainable materials in vehicle manufacturing. It has cut down on harmful material content and the use of heavy metals: it has increased what can be recovered and recycled at the end of a vehicle’s life and reduced waste to landfill. In partnership with the recycling industry, car makers have also set up national networks in European member states and guided dismantlers in de-pollution and recycling procedures. These now provide consumers with a convenient and cost-free means to return their vehicles. However, the rules governing car recycling have*

proved complex and inflexible. The End-of-Life Vehicle Directive is a clear test case where better regulation principles, espoused by the High Level CARS 21 group, should be applied. Simplification and harmonisation with other legislation must be the goal.

Recycling is a priority for both the EU and automotive industry. As producers, car makers acknowledge their responsibility to deliver sustainable products from cradle-to-grave and are proud to report major progress towards this goal. Estimates suggest between 2 and 5% of total car CO2 emissions are generated during the recycling phase of a car's life. Only a very limited amount of waste to landfill still comes from the automotive sector, although around 8 million vehicles reach the end of their lives each year. Through a combination of innovation in recycling and recovery technology, material management and information systems that are unique among manufacturing industries, the industry can demonstrate reusability and recovery rates requested by legislation, leading to reduced waste-to-landfill and improved car recyclability. Manufacturers have cut content for the four heavy metals - mercury, cadmium, chromium (VI), and lead. Chromium (VI) and cadmium have been eliminated entirely; remaining mercury amounts - which are due to be phased-out - are already negligible. Lead applications like solder, for which there is no technical alternative, amount to just a few grammes in each vehicle.

End-of-Life Vehicle rules

The End-of-Life Vehicle Directive and Directive on Reusability, Recyclability and Recoverability of motor vehicles set new requirements for vehicle recycling. Today, new vehicles must demonstrate reusability and/or recyclability of at least 85%, and reusability and/or recoverability of at least 95% by weight, if measured against the international standard ISO 22620. Auto makers support the principle of producer responsibility, but also their role in helping consumers recycle end-of-life vehicles. However, recycling remains an issue for which the contributions of all stakeholders should be considered. Product is the industry's core competence; an integrated approach, working with the recycling industry, legislators, and customers, is the best way to ensure continued progress in vehicle recycling.

A case for simplification

Car manufacturers face a major challenge, balancing goals in recyclability with targets in other areas including CO2 reduction, improved safety and reliability, while making sure vehicles remain affordable for the customer. Based on past experience, car manufacturers stress that the End-of-Life Vehicle Directive is not a positive example of regulation. The auto industry believes it should be used as a test case for better regulation. The current rules are sector-specific, inflexible, partly contradictory, and overlap with other regulations. Regulatory targets that do not generate cost-effective environmental gains must be reviewed. Sector specific material restrictions are also unacceptable. Finally, the industry stresses that product-focused rules should be identical across the EU to maintain the integrity of the single market.

.....

The Green Car Innovation Fund

In comparison to Europe, Australia's idea of a green car seems to be one which runs on less fuel and - while doing so - emits fewer greenhouse gases. *Partially green.*

On November 10, 2008, the Innovation Minister the Honourable Kim Carr, and the Prime Minister, Kevin Rudd, jointly issued a press release announcing the Green Car Innovation Fund: "a \$6.2 billion plan to make the automotive industry more economically and environmentally sustainable by 2020."

Imagine how much more sustainable transport would be in Australia if the federal government encouraged investment of \$6.2 billion in public transport and long-distance rail freight.

The Green Car Plan will feature an expanded \$1.3 billion [Green Car Innovation Fund](#) [Fact sheet on the fund] which will provide Australian car companies with the opportunity to receive Government funding to design and sell environmentally friendly cars. The Innovation Fund will see the Australian Government match industry investment in green cars on a \$1 dollar to \$3 dollar basis over a ten year period from 2009. The fund provides \$1.3 billion over ten years, commencing in 2009-2010, to Australian companies, individuals or other entities for projects that enhance the research, development and commercialisation of Australian technologies that significantly reduce fuel consumption and/or greenhouse gas emissions of passenger motor vehicles.

This is another chapter in the Rudd Government's green investment strategy to transform Australia's economy into a low-carbon emission, internationally-competitive economy of the future.

This is decisive and strong action to protect the Australian economy during the global financial crisis.

The 13-year [New Car Plan for a Greener Future](#) is about manufacturing competitive, low-emission, fuel-efficient vehicles in Australia. It will create well-paid, highly-skilled green jobs for the future.

The \$7.7 billion automotive industry is critical to Australia's economic future because it employs over 60 000 Australians, and is critical to national R&D and exports.

The government's investment strategy is two-fold: to make the Australian economy internationally competitive, through export of "green cars" or "green car" designs, and also low-carbon emitting.

Nothing in there about reducing greenhouse and *toxic emissions* during the mining, smelting, and manufacturing stages of car production, nor end-of-life recycling and waste reduction, nor about reducing *toxic emissions* during car-use. Not even a ban on the most obviously replaceable use of lead in cars – wheel weights, tonnes of which fall off cars and enter waterways every year. If reduced fuel use during the car's life is the only goal, bigger lead acid batteries for solar and electric and hybrid cars are on the horizon, because lead remains the cheapest material for storage batteries.

Car sales are set to rise, so more lead will need to be mined...unless there are incentives for more stringent contaminant standards in lead acid battery manufacturing, and/or for longer-life batteries, and/or incentives which eliminate lead altogether as the preferred (cheapest) battery material. If people are told a car is "green", they're more likely to buy it. The LEAD Group calls on Minister Carr to make the "Green Car" Fund *totally* green.

Even without government funding to the car industry, the number of cars has increased faster than the rate of human population increase in the last 20 years. The use of lead for batteries has gone from 50% to 80% of all lead used. The amount of lead mined in the world increases every year.

Due to lax contaminant standards in vehicle lead-acid battery manufacturing, used batteries cannot currently be 100% recycled into new batteries. So there is at present a need to add newly-mined lead into the battery manufacturing process when the feed source includes used lead acid batteries, because the used lead contains contaminants. Thus the total amount of lead mined in the world increases year by year, mainly to meet the demand for batteries for new cars and cars in service. The Green Car Fund provides no incentives for batteries to be cradle to cradle sustainable. Australia looks set to remain the biggest lead exporter in the world. But let's not kid ourselves that we're going to have truly Green Cars for the Australian or export markets.

This is not leading the world in sustainable transport.

What makes climate change and lead poisoning together, worse than either problem on its own?

Some fascinating observations (see below) that have been made in many places for many years are that the hotter it is, the higher the blood lead level, and that if someone who already has lead poisoning gets overheated, they suffer worse health effects as a result eg becoming more agitated or aggressive. Drought too, brings dry dusty environments and thirst or restrictions on water use for drinking and especially cleaning away lead pollution – all factors which increase exposure and absorption of lead.

One can only wonder at the possible consequences should average temperatures continue to rise and drought affect more of the globe. According to Sir Nicholas Stern, average global temperature has already risen 0.7 degrees centigrade above pre-industrial times. Predictions vary that temperatures will rise another 1.5 – 2 degrees even if action is taken today on reducing greenhouse gases, or 5 – 6 degrees by the end of this century for a "business as usual" scenario. [See <http://uktradeinvest.britaus.net/news/newsdefault.asp?id=714> and <http://bhc.britaus.net/uploadedFiles/News/Speeches/2007/18>]



Drawing by Anne Roberts, 2009

When governments, such as is happening in drought-ridden Australia at the moment, start to apply water restrictions and promote the use of rainwater tanks to capture stormwater or drinking water, they need to also educate the population on the folly of ignorance of lead in roof products or assuming that there is no lead on the water collection area. No one should be allowed to simply add a rain water tank to an existing building without first removing the lead. The Australian Building Code only began to exclude the use of lead flashing on some roof-types in 1996 and many council building officers and builders were not made aware even of that first step towards eliminating obvious sources of lead from roofs. There is such a variety of potential sources of lead that can be found on a roof collection area, it is not in any way an insignificant issue and one tank in four in rural Victoria has higher than the health guideline level of lead in the water as a result. [See "[Victorian Tankwater Lead Results Alarming!](#)"] Tankwater should always be tested for lead as soon as the tank is installed to ensure that all lead sources were successfully identified and removed.

The following list of leaded roof and plumbing products may not even be complete but serves as a guide:

leaded paint,
ceramic tiles,

leaded PVC pipes,
leaded PVC roofing materials,

lead-headed nails,
galvanized guttering,
sheet metal roofing materials such as galvanized
iron & lead roof sheets,
lead washers used on the bolts holding the sheet
roofing down,
copper pipes potentially lead soldered,

leaded PVC guttering,
lead guttering,
fittings with lead solder or leaded brass or leaded
bronze components,
galvanized tanks and tanks with lead solder.
[See "[What to do if you have too much lead in
your tankwater](#)"]

As water becomes more scarce, people will be even more reticent to regularly clean the sludge and lead-headed nails and washers etc out of their tanks, so, lead concentrations can only be expected to rise as temperatures rise.

Lead poisoning rates worsened in some drought-affected communities where they were previously showing constant improvement

On March 15th 2007, the first rise in blood lead levels since 1992 was reported for young children in Broken Hill – a town in outback Australia and home of the largest lead mining operations in the world. Drought has affected most of central Australia, including Broken Hill where now 28% of young children have a blood lead level exceeding the WHO guideline. Verity Edwards wrote in *The Australian* newspaper:

“The World Health Organisation's guideline for safe blood lead levels is 10 micrograms of lead per decilitre. While the median in Broken Hill has risen from 5.5 µg/dL to 5.9, the Aboriginal mean has risen from 8.7 to 9.7. And lead experts, such as Adelaide University researcher Peter Baghurst, have argued that the WHO levels should be lowered to 2 µg/dL.”

[Ref: “Water cost link to high level in kids” www.theaustralian.news.com.au/story/0,20867,21384704-23289,00.html]

Heat and Dust: why lead poisoning is called the “Summer Disease”

The following was originally published in LEAD Action News vol 4 no 1, Summer 1996:

Ref: (1979) V Garnys, R Freeman and L Smythe "Lead Burden of Sydney Schoolchildren", Uni of NSW, p160.

Several publications [AM Baetjer (1959) *Industrial Medicine and Surgery*, 28, 137, and JC Aub et al (1925) *Mediano*, 4, 1] have noted the increased incidence of childhood lead poisoning during the summer months. In a recent publication entitled "The summer disease: An integrative model of the seasonality aspects of childhood lead poisoning", JM Hunter (1977) [in "Social Science and Medicine" 11, 691-703] reviewed this phenomenon by considering air pollution, maternal-foetal exchange of lead, biological models and the effects of sunlight in the USA.

In Australia, Freeman [various references 1969-1973] noted the increased number of hospital admissions in summer for childhood lead poisoning. [Ref: www.lead.org.au/lanv4n1/lanv4n1-5.html] In his 1970 article “Chronic Lead Poisoning in Children: A Review of 90 Children Diagnosed in Sydney, 1948-1967 1. Epidemiological Aspects”, Freeman observed:

Seasonal Incidence

“Most of the children, and in particular those with acute encephalopathy, presented in the hot summer months, December to February, but cases occurred throughout the year, often precipitated by an intercurrent infection. Children with moderately severe poisoning may seem well during the winter months, but tend to develop symptoms during the hot summer period. The reason for this is not clear. Solar radiation, which increases the synthesis of vitamin D in the skin, may aid absorption of lead, and factors causing dehydration or acidosis, which like infections mobilize lead from the bones, may be more common in the hot weather.”

JM Hunter also wrote “The summer disease. Some field evidence on seasonality in childhood lead poisoning” published in "Social Science and Medicine" in 1978 Jun;12(2D):85-94.

It is certainly worth investigating if average blood lead levels are rising in other communities where average temperatures are rising. Communities hosting lead product manufacturing, lead acid battery recycling, lead

mining or smelting operations are the most likely to have biannual blood lead survey data over several decades, which could then be compared to temperatures over the same period.

Do high blood lead levels cause a rise in body temperature?

It appears that high blood lead levels do in fact cause a rise in body temperature. Hunter (1975) cites the following examples in "The Diseases of Occupations" section on Lead Poisoning:

"In 1947 Bini and Bollea described two fatal cases of poisoning, where ethyl-petrol intended for use as aviation fuel was used for the dry cleaning for clothes. The patients were Italians, a man of American airmen stationed in Italy. They worked in a room which was small, closed and poorly ventilated, and they ironed the clothes while they were still wet with the leaded petrol. After a few days' exposure they suffered from anorexia, vertigo, general weakness and insomnia. About a week later there was psychomotor agitation, with a rapid stream of disconnected talking and mental confusion in the nature of a toxic confusional delirium with visual and auditory hallucinations occurring together, tremors affecting all muscles, myoclonus and choreiform movements. Two days later they became comatose and died with a temperature of 105 degrees F."

In 1970, Ronald Freeman reported that 11 of the worst cases in his research paper entitled: "Chronic Lead Poisoning in Children: A Review of 90 Children Diagnosed in Sydney, 1948-1967 2. Clinical Features and Investigations" had presented at the hospital with infection (presumably including fever):

"More than half the [90] children had evidence of encephalopathy [such as convulsions, coma or signs of raised intracranial pressure] and in most of them it was present at the time of their admission to hospital; but in a few cases it appeared during the subsequent course of the illness, when it was nearly always precipitated by an acute infection.

How does heat affect the lead poisoned individual?

The following was originally published under the title "Lead Workers Case Studies" in LEAD Action News vol 4 no 1, summer 1996:

Case G is a firearms instructor for the Security industry. When he had his blood lead tested and found he had a blood lead level of 1.68 $\mu\text{mol/L}$ (35 $\mu\text{g/dL}$) his doctor "was helpful, but I don't think she knows that much about it herself". The senior police sergeant in charge of the Firearms Registry in his area had suggested that he be tested when the instructor started getting "very short-tempered". The Firearms Registry supervises all security firearms instructors in Victoria. The senior sergeant had been lead-poisoned himself (4.1 $\mu\text{mol/L}$ - over 80 $\mu\text{g/dL}$) and needed chelation, and so was aware of the symptoms. The instructor had previously worked only on outdoor ranges. The day after running his first 3 hour course at an indoor range, he felt "generally off-colour. The range isn't well-ventilated". After 12 of these sessions, "I have violent mood swings -my wife says it's like bad PMT. I realise it at the time but I can't stop myself. Any increase of pressure on me is hard to handle. When I go out into the sun, if I get a lot of UV, I know I'm going to get a lead dump. I get hot flushes - it feels like I'm spontaneously combusting from inside - my entire body heats up and breaks out into a sweat. [See article following "Lead Poisoning: the Summer Disease".] I have short term memory loss and I get a hot metallic taste in my mouth after work." He also suffers joint pain for which he is being treated with anti-inflammatories. [Ref: www.lead.org.au/lanv4n1/lanv4n1-4.html]

And it's not just humans who suffer worse lead poisoning effects when they get hot. One GLASS caller told us about her dog fitting when he was overheated:

"I had an old English sheep dog years ago in an old place in Sydney & my husband was stripping furniture and the dog chewed a door. I was playing with the dog and he went into fits. If he got slightly hot or excited he'd have the fits and I never knew when they'd happen and it really upset me at the time and the vet took ages to figure out that it was lead poisoning." [Ref: GLASS Call ID 200703-620, 28th March 2007]

Four thousand nectar-eating birds died of lead poisoning in Esperance, Western Australia in December 2006 during a week in which "there was one day – 17th December – when the bird deaths were really bad" (according to the resident Michelle Crisp, who first alerted the authorities to them) and the temperature

was 42.5 degrees C – the hottest day in December 2006 [Ref: www.bom.gov.au]. A further 180 birds died in the week ending 9th March 2007, again mostly on the 8th March when the temperature was 38.5 degrees, again the hottest day of that month [Ref: www.bom.gov.au]. The people of the town have been left wondering whether a single incident of lead ore dust escape from the port facilities preceded each round of deaths or whether the birds were slowly accumulating lead from ongoing dust escape and the temperature was what actually finished the lead poisoned birds off. Some people theorize that the overheated birds would have taken in more nectar or water, which if highly lead contaminated, may have been the pathway to death, but no particularly highly contaminated water in their range has yet been identified, although a dam in the area that had water in it in December was pumped dry before the water could be tested for lead [Ref: personal communication with Michelle Crisp. GLASS Call ID 200702-096, 7th February 2007]

Saunas or heating and showering as a method of “getting the lead out”

Knowing that heat moves lead out of the body via sweat, saunas followed by showering are a now well-established alternative treatment for lead poisoning. Here follows an example of one person’s experience with heat treatment:

“I was exposed to lead paint working as a remodeler on old Victorian houses. I had been stupid, thinking that plumbism was just for parents of small children to worry about. That was over a year ago. At the time, I was experiencing some alarming symptoms including trouble concentrating, sleep and appetite disruption and a very noticeable loss of my sex drive - these were the things that prompted me to get tested in the first place. Since then I would have to say that I’m better, but as you can probably imagine it’s hard to say by how much. As far as treatment goes, I haven’t done much except to take a lot of baths and saunas to try and flush my system. I also started doing "Bikram" yoga, which consists of yoga performed in a very hot room (115 degrees!). I don’t know if all this has helped, but I figure it can’t hurt.” [Ref: GLASS Call ID 200702-083, 5th February 2007]

The following quote is from a 70 year old lead poisoned woman, a member of The LEAD Group’s Lead Poisoned Adults e-group, 21/4/09:

“I have chelated for lead off and on for three years. When the levels go down, I tolerate heat. The first sign of lead levels rising, is the burning in my feet and ankles, the intolerance to heat and no endurance in any sport.”

Climate change, floods, cyclones and the potential for lead poisoning

An increase in flooding from severe cyclones is a predicted effect of global warming in some parts of the world. Flood water provides an opportunity for lead particles - the legacy, amongst other things, of years of leaded-petrol use - to be spread over a wider area. In the article “Characterization of Flood Sediments from Hurricanes Katrina and Rita and Potential Implications for Human Health and the Environment.” by Geoffrey S. Plumlee et al, the authors conclude that:

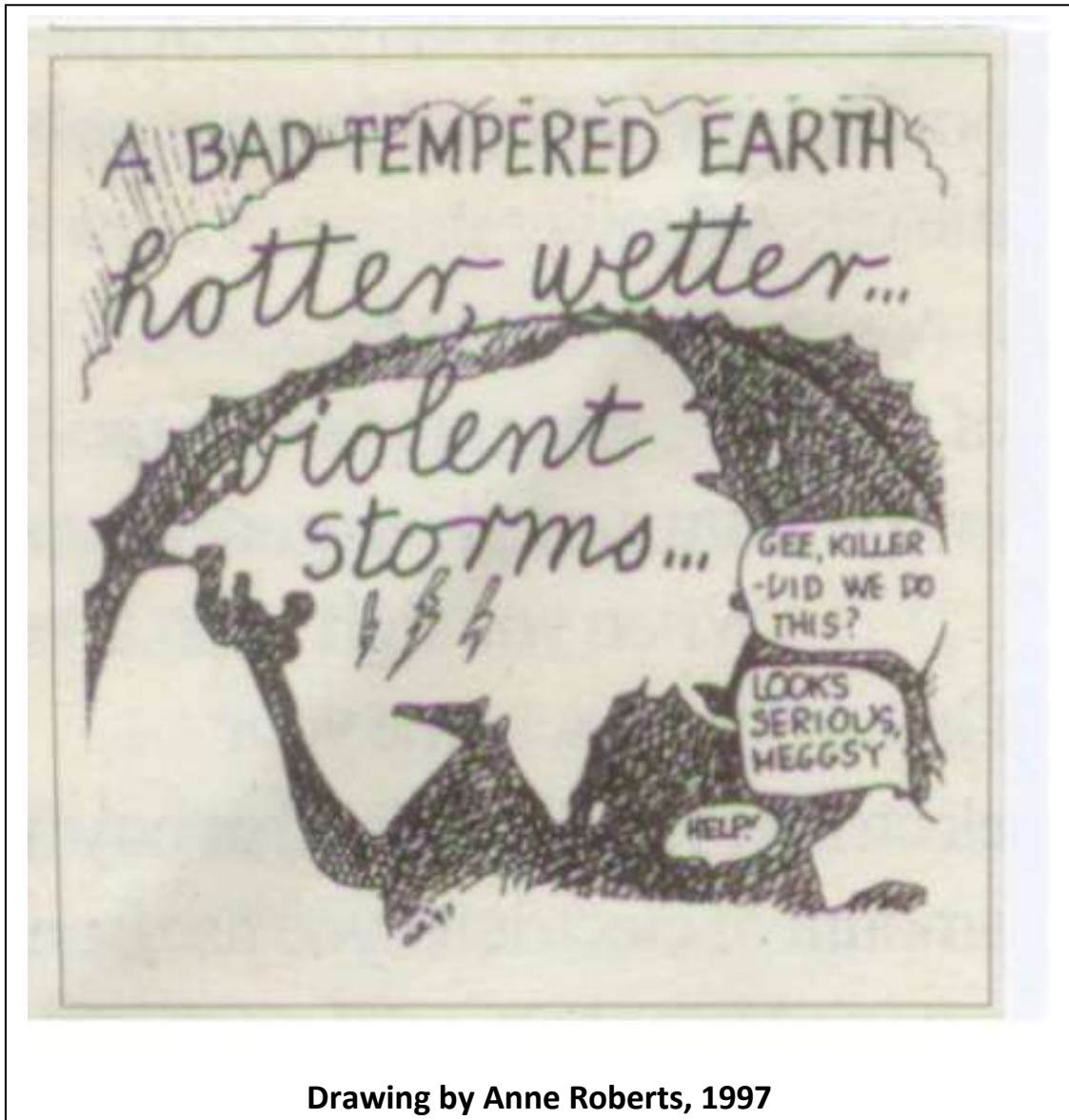
“Several lines of evidence indicate that flood sediments in the downtown New Orleans area were derived primarily by reworking of older, highly contaminated urban soils, with elevated concentrations of lead, arsenic, other heavy metals, and PAHs (e.g., benzo(a)pyrene). Lead and some other metal contaminants in the downtown soils and flood sediments are likely to be quite bioaccessible, and therefore the downtown soils and their derived sediments pose a potential long-term exposure risk to residents.” [Ref: http://pubs.usgs.gov/circ/1306/pdf/c1306_ch7_i.pdf]

Climate change, wildfires and sources of lead released during fires

The DVD of the movie *An Inconvenient Truth* by Al Gore (2006) contains in the Special Features, a 2007 documentary entitled *An Update with Former Vice President Al Gore* in which Gore discusses trends which came to light since the making of the movie, such as the increased frequency and severity of wildfires caused by global warming. Wildfires are known by different names in other countries, eg forest fire, savannah fire, brush fire, vegetation fire, grass fire, [peat fire](#), [bushfire](#) (in [Australasia](#)), and hill fire. As discussed above, plants take up lead from the soil so every wildfire will contribute some lead pollution but the issue becomes far more serious when lead-painted buildings and infrastructure start to burn, and worse still if leaded items such as vehicle and emergency power supply lead acid batteries, lead pipe organs

or radiation shielding start to get turned into lead fumes. Of course, when people are burned in fires, their lifetime stores of lead are released. Depending on the area burned, fires can be a major source of lead air pollution and global warming is predicted to increase the length of the annual fire season.

Action on climate change prevents or abates a plethora of other environmental problems!



Drawing by Anne Roberts, 1997

Residential tenant's successful letter seeking compensation over lead contamination



WITHOUT PREJUDICE

[Tenant's address] NSW [Tenant's Tel: & Mob] [Tenant's Email]

[DATE]

Dear [AGENT]

Re: Lead Levels at [Tenant's address]

Further to your letter dated [date] and our telephone conversation on [date] and your email dated [date], I would like to clarify our position both with regards to the request for a lead assessment on the property, and the matter of discussing this with the landlord. I called by the landlord on [date]. I left my mobile number with his secretary, and I asked if he could call me at his earliest convenience.

He telephoned me back on [date - two days later]. In our conversation I informed him that we would be removing the lead light glass cupboard doors in the kitchen due to lead oxide dust (2 doors removed by unscrewing two screws – no damage done and easily replaced) and would wrap them up and store them. I explained that we were concerned about the level of lead exposure and that we could not have them in use, as they were a health risk. He had no objections to this, and even mentioned that he could not take any further risks with my children. My wife had noticed large amounts of dust coming off the lead lighting. So much so that she had to clean the dust numerous times throughout the day. The cupboard in question housed all our cups and plates and the doors opened directly on top of our youngest daughter's seat at the kitchen table. The dust accumulated on our plates and cups that were stored behind lead light glass cupboard doors. Every day there was a new layer of dust inside the cupboards on top of the cups and plates. My wife researched and identified that it may be lead oxide dust. Lead oxide dust is extremely toxic, especially to young children.

I find it incomprehensible for this a property to be rented to a family with young children without making appropriate health and safety checks especially as the house contained lead light glass windows in the kitchen and the level of corrosion on the inside of the cupboard doors was extreme. My wife had also noticed she was suffering from unusual twinging / prickly sensations in her extremities of her feet and she felt unusually tired. My wife is a qualified Senior Research Scientist and thoroughly investigated all the information available on the dangers of lead exposure and the common sources found in houses. May I remind you that we are just pursuing our right to bring up our children in a safe and healthy environment? The Residential Tenancy Agreement clearly states: "12. The landlord agrees:

12.1 to make sure the residential premises are reasonably clean and fit to live in."

I find it astounding that in your telephone conversation or letter you showed no willingness to carry out this duty you have towards us. Quite the contrary, you firmly stated you would like the cupboard doors to be reinstated immediately. I find this request absolutely outrageous as you have neither checked nor investigated or are willing to have the white dust on the lead lighting checked. You stated in your letter dated [date]: "The landlord will not be employing the services of a private contractor to measure the lead levels at his property as it is not his responsibility to do so." If not the landlord's responsibility then whose responsibility is it? We had our blood lead levels checked. All of our lead levels came back seriously elevated and very dangerous to our health. We will continue to monitor our blood levels.

My wife's venous blood lead level is 0.6 $\mu\text{mol/L}$. which is dangerously high and well above the NHMRC acceptable level of 0.48 $\mu\text{mol/L}$ and the level acceptable to the Global Lead Advice & Support Service (GLASS), of 0.1 $\mu\text{mol/L}$. Having discovered our blood lead levels were elevated. We then contacted:

Elizabeth O'Brien, Manager, Global Lead Advice & Support Service (GLASS) run by The LEAD Group Inc.
PO Box 161 Summer Hill NSW 2130 Australia
Ph +61 2 9716 0132 Freecall 1800 626086

She advised us that although the stained glass cupboard doors may have been the main source of exposure it is highly unlikely it is the only source due to the age and condition of the property. The property would need to be assessed for lead levels/exposure. There is a lot of cracking and peeling paint and there may be other possible lead hazards.

I then contacted the Landlord and explained the above. I informed him that there was a lot of flaking cracking paint in the house and that it may be a source of lead dust/exposure and that it would need further assessment. I asked that he have an independent assessment carried out to identify any other lead sources that may be present in the house. (2 telephone numbers of Independent assessors supplied to landlord)

As per your email dated 11th March, it appears that the landlord has had a change of heart. You stated: "The landlord has asked me to advise you that he will be organising a lead level inspection of the property. I assume someone will be in contact to arrange access."

[The name of Consultant and company] contacted me and an appointment was made on March 23rd for him to assess the property for lead levels/exposure. He attended on the above date and took a limited amount of samples from the house. As my wife and I are very concerned for the health of our children and ourselves we decided to vacate the property until the results were obtained.

I made 4 phone calls to the consultant and sent numerous emails requesting some feed back. On 14th April he emailed me and stated:

"Dear Sir,

"Am waiting to hear back from the owner, to clear my way for full feedback to you.

"At this stage I am not in a position to give detailed results, but can say that your concerns re the leadlight were spot-on, and the action you have already taken is appropriate and adequate.

"All but one of the other samples do not indicate a health risk (esp the vacuum dust, which showed less than 0.1% - i.e. lead not detected by the Lab analysis).

"However.....upstairs, kids playroom flaking wall paint is not ok. Will need attention before you return from hols, hence I'm trying to get hold of the owner.

Regards

[Name of consultant]

I request a copy of the above report immediately.

I left the property on [xxx date] with my whole family. My wife has refused to return to the property with the children because of the obvious health risks.

Due to the well-documented health risks of exposure to even tiny amounts of lead we need to have this matter addressed immediately.

I have taken legal advice and discussed the matter in detail with the Tenancy Advice and Advocacy Services NSW who pointed out the following regulations:

RESIDENTIAL TENANCIES ACT 1987SECT 22

Tenant's right to quiet enjoyment

"22 Tenant's right to quiet enjoyment"(1) It is a term of every residential tenancy agreement that:

"(a) the tenant shall have quiet enjoyment of the residential premises without interruption by the landlord or any person claiming by, through or under the landlord or having superior title (for example, a head landlord) to that of the landlord, and

"(b) the landlord or the landlord's agent shall not interfere, or cause or permit any interference, with the reasonable peace, comfort or privacy of the tenant in using the residential premises.

"(2) A landlord or a landlord's agent under a residential tenancy agreement shall not, during the currency of the agreement, contravene or fail to comply with subsection (1)

SECT 25

Landlord's responsibility for cleanliness and repairs

"25 Landlord's responsibility for cleanliness and repairs

"(1) It is a term of every residential tenancy agreement that:

"(a) the landlord shall provide the residential premises in a reasonable state of cleanliness and fit for habitation by the tenant, and

"(b) the landlord shall provide and maintain the residential premises in a reasonable state of repair, having regard to the age of, rent payable for and prospective life of the premises.

"(2) In this section:"residential premises" includes everything provided with the premises (whether under the residential tenancy agreement or not) for use by the tenant.

SECT 47

Tenant may apply for an order that rent is excessive

"47 Tenant may apply for an order that rent is excessive

"(1) A tenant under a residential tenancy agreement may, at any time, apply to the Tribunal for an order declaring that the rent payable under a residential tenancy agreement or a proposed residential tenancy agreement for residential premises already occupied by the tenant is excessive, having regard to the reduction or withdrawal by the landlord of any goods, services or facilities provided with the premises.

"(2) This section applies whether or not the goods, services or facilities are provided under the agreement or a separate contract, agreement or arrangement or were provided under a previous contract, agreement or arrangement."

We are a very health conscious family. We eat a totally organic diet and drink pure water. We have never smoked and have the occasional glass of wine.

There are no other sources of lead in our daily life apart from what is inside the house.

Elizabeth O'Brien (GLASS) phone 02 9716 0132, free call 1800 626 086, www.lead.org.au is available for consult on any of the above matters.

We are having further blood tests to monitor our lead levels.

We have taken numerous photographs and mini movies of the lead oxide dust and we have taken further samples in the house which we will be having analyzed ourselves.

The welfare and health of our children, and ourselves is of paramount importance.

Under Section 47 of the Residential Tenancies Act 1987 I am requesting a significant reduction in rent from [date] as this is the date I informed the landlord regarding the lead exposure. I am also requesting moving costs as we have not been able to have "quiet enjoyment" Sect 22 or enjoy the premises as they have not been "fit for habitation" Section 25. 1 (a).

What I am proposing is much less than I am legally entitled to claim for. I look forward to your reply on this matter so we can negotiate a settlement or if you prefer we can take the matter to the Consumer, Trader and Tenancy Tribunal.

I have been advised by the Tenancy Advice and Advocacy Services NSW that that they could schedule an urgent hearing.

I wish to give 1 months notice to vacate the premises at [address]. This is due to unsafe lead levels in the premises. I implore you to use lead-aware painting contractors and cleaning contractors (GLASS can supply referrals) to make the premises fit for habitation and to have Dieter return to re-assess the home prior to renting the premises to anyone else.

Kind Regards

Tenant

CC: [Owner]

CC: Elizabeth O'Brien



Volunteer News at The LEAD Group

Volunteering at The LEAD Group contributes to Career Progress

By Robert Taylor, Volunteer Researcher, The LEAD Group, Sydney, Australia

Here at The LEAD Group we like to watch our volunteers extend their skills and grow in their roles. We also like the recommendations provided by our fearless clan leader, the Irish redhead, the fighting Elizabeth of the O'Briens who contributes to this. Volunteering is a key role for this undermanned outpost, providing a source of employment references for individuals who frequently have little work experience within this country. In the past month Iman Hegazi, a toxicologist from Egypt, who worked very hard in responding with informative advice and library articles to clear the backlog of requests for information sent to us via our website, has won a scholarship for a PhD in medical education. Even though she will no longer be coming in to the office every week (and her presence will be sorely missed) Iman is completing two fact sheets on lead and Alzheimer's (for lay and technical readers respectively) that will be web published on our site.

Orlando Aguirre-Lopez, a Columbian who translates documents into Spanish, has begun a TAFE course as a paraprofessional translator. His Spanish translation of the Iron Nutrition and Lead Toxicity factsheet will shortly be web published. Gayani Vaz Gunawardena has obtained paid employment in an IT position after less than a month with us. Ellie Li has obtained her first work in marketing since finishing her Masters degree during which she expanded her skills by designing and undertaking an online marketing project for our [lead test kits](#).

A young Chinese woman without longstanding family connections in Australia who recently joined our office team has said that volunteering has helped her become better at communicating and socializing with individuals from multi-ethnic backgrounds. "Secondly, I have been an environmentalist since I was a teenager. It is very meaningful for me that I can do this volunteer job for our environment, which helps me to achieve my dream."

As for the Manager, Elizabeth O'Brien, she says: "I really look forward to such dedicated volunteers coming into the office every week. There's always some new task that needs to be done in administering an information and referral service run by a charity, so it's great when the volunteers love taking on the challenge and expanding their skill-set."

We hope to report many similar success stories in future. Any one who wishes to contribute to our effort at lead education while expanding their résumés and work experience should contact us at 1800 626 086 or check out The LEAD Group's volunteer job ads at www.seek.com.au - then click on Seek Volunteer; or www.volunteerssearch.gov.au or www.lead.org.au/volunteer.html

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